

Claims

1. A process for the manufacture of a polyurethane article, comprising the steps of :
  - a) forming a mixture by mixing together either
    - i) a compound having more than one hydroxy group which is capable of reacting with an isocyanate group -containing material to form a polyurethane or
    - ii) a compound having more than one isocyanate group which is capable of reacting with a hydroxyl group-containing material to form a polyurethane,
  - with a catalyst composition comprising the reaction product of an alkoxide or condensed alkoxide of titanium, zirconium, hafnium, aluminium, iron (III), or a lanthanide, a 2-hydroxy carboxylic acid, a base and optionally an alcohol containing at least two hydroxyl groups;
  - b) adding to said mixture the other of the compound having more than one hydroxy group which is capable of reacting with an isocyanate group -containing material to form a polyurethane or the a compound having more than one isocyanate group which is capable of reacting with a hydroxyl group-containing material to form a polyurethane,
  - c) forming said mixture into the required shape for the polyurethane article,
  - d) allowing said mixture to cure
  - e) optionally subjecting the mixture to specified conditions for post-cure conditioning.
2. A process as claimed in claim 1, wherein the polyurethane article is a foam and a blowing catalyst is added to the mixture formed in step a).
3. A process as claimed in claim 1 or claim 2, wherein in said catalyst composition, the alcohol is selected from the group consisting of 1,2-ethanediol, 1,2-propanediol, 1,3-propanediol, 1,4-butane diol, diethylene glycol and a polyethylene glycol.
4. A process as claimed in any of the preceding claims, wherein, in said catalyst composition, the 2-hydroxy carboxylic acid comprises lactic acid, citric acid, malic acid or tartaric acid.
5. A process as claimed in any of the preceding claims, wherein, in said catalyst composition, the molar ratio of acid to titanium or zirconium in the reaction product is from 1 to 4 moles acid per mole of titanium, zirconium, hafnium, aluminium, iron (III), or lanthanide.
6. A process as claimed in any of the preceding claims, wherein, in said catalyst composition, the base comprises sodium hydroxide, potassium hydroxide, ammonium hydroxide, lithium hydroxide, sodium carbonate, magnesium hydroxide, calcium hydroxide, aluminium acetate, zinc oxide, caesium carbonate, zirconium hydroxycarbonate or ammonia.

7. A composition comprising:

- a) either
  - i) a compound having more than one hydroxy group which is capable of reacting with an isocyanate group -containing material to form a polyurethane or
  - ii) a compound having more than one isocyanate group which is capable of reacting with a hydroxyl group-containing material to form a polyurethane,
- b) a catalyst composition comprising the reaction product of an alkoxide or condensed alkoxide of titanium, zirconium, hafnium, aluminium, iron (III), or a lanthanide, a 2-hydroxy carboxylic acid, a base and optionally an alcohol containing at least two hydroxyl groups; and optionally
- c) one or more further components selected from chain modifiers, diluents, flame retardants, blowing agents, release agents, water, coupling agents, lignocellulosic preserving agents, fungicides, waxes, sizing agents, fillers, colourants, impact modifiers, surfactants, thixotropic agents, flame retardants, plasticisers, and other binders.

8. A catalyst composition comprising the reaction product of an alkoxide or condensed alkoxide of titanium, zirconium, hafnium, aluminium, iron (III), or a lanthanide, a 2-hydroxy carboxylic acid, a base and optionally an alcohol containing at least two hydroxyl groups.